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Unpacking early experiences with health technology reassessment in a complex healthcare system

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ABSTRACT

Health technology reassessment (HTR) is an emerging evidence-based policy approach that addresses sub-optimal utilization of health technologies at the systems-level. Internationally, there are few documented accounts of HTR processes and little is known of its potential impact(s). The objective of this study is to explore and describe the initial conceptualization and introduction of HTR in a complex Canadian healthcare system, and identify factors that may contribute to successful and unsuccessful HTR initiatives. Semi-structured interviews with 22 healthcare professionals were conducted. Constant comparative analysis of interview data was used to develop a coding framework and key themes and relationships were synthesized narratively. Several necessary conditions to facilitate engagement with HTR, including understanding of the concept and process, communication, effective leadership, and adequate support, were identified. Sustaining consensual and authentic engagement was identified as critical. Four tensions influenced initial HTR experiences: strategic thinking versus immediate success; practice-based versus academic-based research; have's versus have nots; and incenting versus maximizing value. There is significant potential to integrate HTR in a complex healthcare system; yet identified tensions require careful balancing as they can challenge implementation. These findings will help other healthcare systems to integrate HTR into their operations and advance the field of technology management.

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Introduction

A number of initiatives have been launched internationally to identify and address sub-optimal health technology use in order to achieve optimal value for money from investments in the healthcare system. The international expert consensus Choosing Wisely campaign [1], the National Institute for Health and Care Excellence's (NICE) 'do not do' recommendations [2], and the list of over 150 low-value technologies identified by Elshaug et al. in the Australia Medical Benefits Schedule (MBS) [3] are three such initiatives. Collectively, these initiatives have broadened awareness of sub-optimal technology use and, importantly, have identified a number of existing technologies whose utilization and value should be questioned. However, none of these efforts to date have specifically described or provided operational direction for integrating policy or practice change to optimize technology use at a wide-scale systems-level.

One emerging approach that aims to address sub-optimal technology use at the systems-level is Health Technology Reassessment (HTR). Purposefully merging established research and policy fields, such as health technology assessment (HTA), appropriateness research and implementation science, HTR involves the systematic, evidence-based assessment of the clinical, economic, ethical and social impacts of an existing health technology to inform its optimal use relative to its alternatives throughout the lifespan of a technology [4]. In addition, HTR is a tool to support the development and guide the implementation of evidence-informed policies to achieve optimal value for money of existing technologies [5]. This novel approach cross-cuts research, practice, and policy domains [4,5].

HTR results in a number of potential outcomes, including decreased and increased use, no change, or exit of the technology from the healthcare system [5]. This systematic approach can identify funds that can be reallocated to support investments that provide greater value for money; a necessary requirement within a fixed budget if new technologies wish to be funded [6–9]. Globally, HTR is in its infancy; there is little known about the HTR process and its potential impact(s). In particular, very little is known about how to integrate a HTR process into a complex healthcare system.

In 2014, HTR initiatives were initiated across a large-scale healthcare delivery organization in the Canadian province of Alberta, which is responsible for the delivery of healthcare for the provincial

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population of 4 million. The purpose of this study is to understand the facilitators and barriers for advancing HTR, or another technology management approach, into this complex healthcare organization. The findings from this work will help other healthcare systems to readily integrate HTR into their operations and thus advance the field of HTR and optimal technology management.

Methodology

Participant selection and setting

Purposive sampling was employed to recruit healthcare providers and decision-makers affiliated with a large healthcare delivery organization in one province in Canada (Alberta Health Services). A maximum variation strategy was used with the goal of identifying a diverse group of interview participants at the 'macro' level of the healthcare system, with higher-level clinical and operational decision-making responsibilities within the healthcare system. In maximum variation sampling, study participants are intentionally selected to maximize variation on dimensions of interest [10,11]. In this study, these dimensions included leadership level, leadership type (e.g. medical, administrative, academic, health services), and clinical area. Maximum variation was supplemented with snowball sampling, wherein participants were asked to suggest other potential study participants who may have valuable insights. Research ethics approval for this study was obtained from the University of Calgary Conjoint Health Research Ethics Board (REB13-0345) and informed consent was obtained from all participants.

Data collection

Semi-structured interviews with participants were conducted in-person or via telephone between May and August 2014. An interview guide was developed to gather perspectives on the organizational context within which the HTR initiative was embedded, the concept of HTR and the evolution of HTR, and its alignment with other organizational priorities.

The interviews were led by one researcher and recorded by a second. Interviews were conducted until theoretical saturation was reached, defined *a priori* as the moment when no new data was being collected and the concepts of interest were well-developed. Participants were also asked of any additional resources that may be relevant to the information discussed during the interviews; all resources were retrieved and included in the collected study data. The interviews were audio-recorded and transcribed verbatim with the verbal consent of the participants.

Data analysis

The transcripts, documents, and notes were combined for each participant and entered into HyperRESEARCH Version 3.7.3 (Research Ware Inc.), a research software program used to support the management and analysis of qualitative data. An initial analytical or coding framework was developed through constant comparative analysis, wherein concepts in the transcripts, documents, and notes were inductively identified and coded. The research team collaboratively identified the most prominent themes and the relationships among them, as well as the high-level interpretation the data with respect to the implementation of HTR in a complex healthcare system.

Results

A total of 22 key informant interviews were conducted. Five participants were senior, executive-level health system leaders, nine held leadership roles within operations or strategic clinical areas, five were medical leaders within university settings and/or operations-based strategic clinical areas, and the remaining were a mix of participants identified as having valuable insights on this research topic (Table 1).

From the participants' early experiences with HTR in the province, four broad themes emerged: (1) the required prerequisites or necessary conditions for engaging healthcare professionals in a HTR agenda; (2) the characteristics of successful engagement; (3) emergent tensions that can inhibit the implementation of a HTR agenda; and, (4) select facilitators of HTR. The relationships between each of these elements are visually displayed in Figure 1.

Necessary conditions

Participants identified necessary conditions for engaging clinicians in the HTR agenda, including an understanding of the concept itself, effective communication between and within units of the broader healthcare system, formal and informal leadership, and tangible support for clinicians.

Understanding the HTR concept

The majority of interviewees expressed confusion on the topic of HTR as a whole, particularly the actual

Table 1. Interview participants.

Interview participant's role	Number
Senior executive-level health system leaders	5
Health system operational leaders	5
Strategic clinical area medical leaders	3
Strategic clinical area administrative leaders	4
University-based medical leaders	2
Other (key informants identified as having valuable insights)	3
Total	22

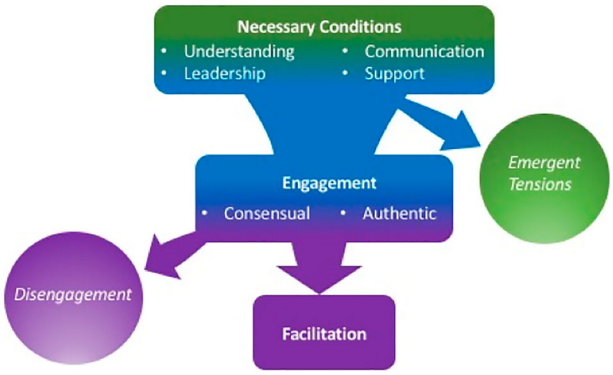

Figure 1. Relationships between necessary conditions, engagement, facilitation and emergent tension.

functioning of the process and the role each stakeholder must play. This uncertainty inhibited the success of HTR, as stakeholders were unfamiliar with the concept and therefore reluctant to engage in HTR initiatives. As such, the need for a clearly defined and exhaustive explanation of HTR, including the steps or process, was identified as an initial step towards engagement of clinicians.

Communication

Communication is vital to engagement as it provides a way to disseminate knowledge throughout the system. The challenge of communication within a complex healthcare system was identified as a broad issue, beyond the agenda of HTR; effective communication is foundational to implementation of any healthcare system initiative.

The interviews revealed a perceived breakdown in the communication between stakeholders within as well as across organizational levels of the healthcare system. Interviewees often commented that information dissemination is hindered by the lack of a formal mode of communication within the system. A silo-effect was identified as a consequence of poor communication:

> … the [groups], once formed, do not have a mechanism of communicating back … to the clinical departments of what they're actually doing and what they're achieving. So there is to me quite a bit of a silo effect that has happened with the [system]. 18_HTR

Formal and informal leadership

The need for leadership from individuals in various roles, with differing levels of power, was identified. In the case of HTR, top-down leadership – leadership provided by those with the most power – was perceived to be insufficient and created greater tension between stakeholders. Participants also identified tension between healthcare professionals with varying degrees of power, particularly concerning cost and potential elimination of funding for a technology. Having front-line clinicians, who use the potential technologies for HTR, actively involved in selecting the technology, seems to be a prerequisite for engagement. Interviewees also echoed the importance of valuing voices from the frontline through to the highest formal leaders in our system, in order to facilitate collaborative engagement in the HTR agenda.

Support for clinicians

Interviewees identified the sustainability of HTR initiatives as challenging in that a lack of support could lead to clinician disengagement. The use of a bottom-up approach to HTR requires support from the various organizational levels of the healthcare system, additional resources, and time. Participants expressed that clinicians (e.g. physicians, nurses, allied healthcare professionals) involved in the HTR process must be given the necessary support to fully engage and bring the project to fruition. Clinicians cannot be required to do the work of HTR, in addition to all other responsibilities, with little to no increase in either monetary or human resources. One interviewee experienced the success provided by appropriate support:

> Some improvement we've seen in the last few initiatives is that they were adequately resourced, including project management resources and one-time resources to augment … an implementation … [which] is critical because people can't just add things to the side of their desk. 16_HTR

At the same time, interviewees found it unfair to concentrate the human resources needed to carry out HTR in one set of stakeholders. Because HTR ultimately influences all layers of the healthcare system, it was thought that support, monetary and otherwise, flowing between operations, administration and clinicians is important.

Engagement

Interviewees identified some essential characteristics of engagement itself, for successful implementation of HTR within our system. Engagement was thought to be most successful when it is consensual and authentic. Interviewees identified consensual engagement to be voluntary on the part of the stakeholder; indeed, they should truly want to engage with the HTR agenda.

With respect to authentic engagement, clinician interviewees expressed concern with monetarily incentivizing buy-in. Improved quality of patient care and patient well-being was identified as effective for engaging a clinician in a process which may also result in the removal or reallocation of funding. However, it was acknowledged that value for money is an inevitable element of healthcare and must be addressed when engaging any stakeholder, including clinicians. One interviewee identified the importance of discussing

cost with clinicians by reframing patient well-being to incorporate an element of cost;

> And it was actually a clinician in the room who said no, that's not what this is about. This is about providing good quality care. And what we have to understand is that when we don't provide good quality care, we waste money. 19_HTR

Disengagement

Instances of disengagement were also identified. Disengagement can occur at the onset with clinicians who lack the support they need to be leaders in HTR. On a larger scale, there are many different stakeholders, beyond clinicians, that must be engaged with and who must cooperate in order to have success.

Interviewees found that the introduction of HTR within this healthcare system was challenged by an insufficient understanding of the HTR concept and process, ineffective communication, frequent changes in leadership, and wavering support; all of which contribute to disengagement. One participant cited these reasons for disengagement with stakeholders:

> So I think that engagement---like when we come to the table and we're all with guns a blazing and we've got money and we're engaging and let's do all this great work, and then the endorsement seems to fall off … I know we're losing some engagement. 11_HTR

Emergent tensions

Interviewees identified tensions within the broader healthcare organization that influenced their initial experiences with HTR. Four specific emergent tensions emerged from the interviews: strategic thinking versus immediate success, practice-based versus academic-based research, the have's versus the have nots, and incenting versus maximizing value (Figure 2).

Interviewees identified tension between strategic thinking and immediate success to affect relations between the stakeholders at different organizational levels of the healthcare system. HTR initiatives were initially embedded as priority work for stakeholders in more strategic clinical areas or roles of the healthcare system. However, the actual implementation of HTR initiatives required close collaboration with stakeholders in operational roles, who were already occupied with and under pressure to demonstrate success in other existing operational priorities. Therefore, time was identified as a key factor in this tension. The introduction, evaluation, and change in practice to optimize technology use requires the time of many stakeholders who also had operational responsibilities.

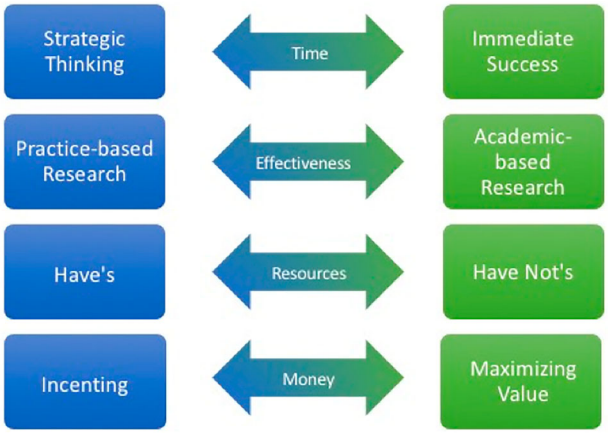

Figure 2. Identified emergent tensions.

A related tension was identified between those in operations and academia. It was thought that practice-based and academic-based research could not exist simultaneously, with competition over limited funding being a particular point of tension. Academics were often depicted as favouring academic-based research, while those in operations preferred practice-based research. This sentiment was expressed throughout the interviews:

> … those that are entrenched within an operational context and think that their operational activities are the only salvation to humanity and on the other side you have the research community. 07_HTR

This tension over resources can also be seen in the description of some clinical areas as the haves and others as the have nots. Participants noted a lack of support, monetary and otherwise, between clinical areas in the system as a source of tension. It was expressed that the clinical areas with mature networks and programmes across the province were often those which already receive the attention and support they need to succeed. It was also these areas that were eligible for specific HTR project funding. In essence, some groups quite simply 'have' more than others, and therefore find more success in their endeavours. One interviewee spoke to this idea;

> So the biggest disappointment […] was that the clinical networks were formed without substantial consultation around the question of where the biggest developments in medicine needed to be. And without taking into account the question of demographics, population growth and where actually our biggest failures were. And then they were developed in areas that were, in fact, our biggest successes already. 18_HTR

The last tension we identified occurs between incenting and maximizing value. Essentially, it is the topic of cost that created the most tension in the implementation of HTR. Interviewees expressed concern about the topic of reallocation of reinvestment dollars, specifically in terms of clinician engagement. Citing the idea that clinicians are difficult to engage in conversations of cost, the concern extends to how to engage them in conversations of reallocating funds to other clinical areas. This creates a definitive tension between and within all clinical areas, as one interviewee pointed out:

> You get a lot of physician resistance or other kinds of resistance because of entrenched agendas. People say well, why should I engage in this because it is going to try to disinvest my area and then channel the funds to another area that is not in my department or not in somebody else's department? 20_HTR

Facilitation

In addition to the aforementioned emergent tensions, addressing the challenge of priority fatigue among healthcare professionals was identified as a potential facilitator for the HTR agenda. The issue of priority fatigue can be interpreted as the growing disinterest in new initiatives, such as HTR, as every new initiative is labelled as a priority. Rather than engaging in a new priority initiative, such as an HTR project, many health professionals described waiting in hope for the initiative to eventually disappear and be overtaken by subsequent, newer priorities. HTR may have been particularly vulnerable to priority overload, as it was accompanied by a certain degree of skepticism. This issue of priority fatigue emerged as a powerful contributing factor to discourage stakeholders who were not already champions to subsequently disengage in HTR initiatives.

That being said, interviewees described facilitators that were helping to address this challenge as well as the tensions previously described. In fact, much of what was identified earlier as challenges, were also identified among interviewees to be elements that worked well and led to the successful integration of HTR in some areas of the healthcare system. The most prominent example of this can be seen in the discourse on communication. While poor communication was identified as a challenge, good communication was found to be a facilitator of HTR. In some cases, networks were seen to be functioning as they were intended; allowing various pathways of communication to open up and focus on the more intimate challenges of implementing change. One interviewee stated:

> What we've done though is … by being in the same room and by putting our heads together, which is what the network has enabled … We can actually get past some of that BS and start to share things that work. 21_HTR

While there are still concerns over the efficacy of communication, there was also evidence in these interviews that communication is improving and that this is contributing to success. Similarly, leadership was identified as a necessity to the implementation of HTR. Although it is important that leadership on these initiatives come from the bottom/up, there must also be support from the very highest levels of authority in the system. This multi-level support from groups wielding differing amounts of power is vital to facilitating HTR.

Discussion

The initial introduction of HTR activities into a complex healthcare system provided an ideal window to explore the early perceptions of stakeholders and uncover prominent themes relevant to the implementation of HTR. To our knowledge, this is the first exploratory study to describe the integration of HTR activities into a complex healthcare system. We identified that consensual and authentic stakeholder engagement was required to successfully integrate HTR into this complex healthcare system. The elaborate nature of stakeholder engagement was evidenced across the four major themes discussed, including the necessary conditions or prerequisites for stakeholder engagement, the perceived characteristics for successful engagement, the emergent tensions that arose from the initial engagement, and the potential facilitators for subsequent success.

With its focus on improving efficiency and quality of care, HTR has the potential to excite both administrative and clinical leaders with the possibility of not only improving patient outcomes, but also reallocating scarce resources to other areas of higher value care. Keeping HTR activities as high priority, however, requires sustained effort from both senior executive-level leaders and clinical leaders due to the potential for other initiatives to become higher priorities. Thus, monitoring for signs of disengagement in the HTR agenda needs to be continuous and steps taken to mitigate disengagements must be planned for in advance.

In order to accomplish this, the necessary conditions for engagement must be continually revisited. As previously discussed, understanding the concept of HTR encourages greater understanding of its priority within the system. Communicating this importance allows for stakeholders across all organizational levels of the healthcare system to be involved in the implementation of HTR, connecting the provision of adequate support from all stakeholders to ensure the success of the project, or any HTR initiative.

Similar qualitative research studies from other provincial jurisdictions in Canada and in the United Kingdom's (UK) National Health Service (NHS) have described the implementation of programmes of disinvestment [12,13], or evaluations of models for rational priority setting with goals inclusive of disinvestment [141516]. While related to HTR, disinvestment focuses solely on processes of partially or completely withdrawing resources from existing low value technologies (i.e. those that deliver little or no health gain for their cost) [9].

Despite the differing operational definitions, as well as healthcare system contexts, the present study findings uncovered a number of common themes previously recounted in the disinvestment literature. First, the need for clarity of terminology and language communicated about the initiatives were identified as a

prerequisite or necessary condition for execution of HTR and disinvestment activities alike [12,13]. Confusion over terminology has been argued to be a direct barrier to uptake of disinvestment activities, as misunderstanding can lead to fears of rationing [13] and disenchantment of stakeholders [8]. Broad and explicit collaboration with healthcare providers and decision-makers were also identified as critically important to disinvestment decision-making processes [13]. Interestingly, despite more long-term experience with disinvestments activities in the UK, a lack of standard methodology was identified as problematic and methodological improvement may provide greater support for stakeholders [12]. While our present findings did not similarly allude for this methodological need in the context of HTR, tailored support for participants (e.g. monetary or other forms) was identified as a clear tension and may ultimately involve support that is methodological in nature.

Whether optimal technology use is sought through disinvestment or HTR initiatives, success ultimately hinges on behaviour change, which is well-acknowledged in the broader knowledge translation literature to be a difficult endeavour [17]. Acknowledging the importance of meaningful stakeholder engagement and the need to mitigate emergent tensions have been described as key determinants for change [17]. While perhaps observed as criticism, bringing to light the emergent tensions embedded in the healthcare context was important to uncovering perceived barriers to stakeholder engagement and hence implementation of HTR. These emergent tensions may be interacting with and influencing one particular identified barrier to change, priority fatigue. In any large healthcare system there are often a number of priority initiatives being implemented. In this system, HTR was identified and supported by senior clinical leaders as a priority, and also had some support among operational administrative leaders because of the focus of the focus on cost-effectiveness, and the potential to free up some dollars for reallocation.

There are limitations to this work worth noting. As with other qualitative research studies of this nature, our intent was to provide a detailed account of the early experiences with HTR in one particular complex healthcare system. As such, the transferability of the present findings to other healthcare system contexts may be limited. We also chose to solely interview participants at the 'macro' level of the healthcare system, with higher-level clinical and operational decision-making responsibilities within the healthcare system, given our emphasis on painting a picture of the context within which HTR was being introduced. Therefore, our present findings were not directly drawn from the experiences of front-line clinicians or stakeholders directly involved in the implementation of HTR activities in practice. Lastly, by focusing our data collection period within the early stages of HTR implementation into the system, we acknowledge that our participants' experiences with and perceptions of HTR have likely evolved over time. As greater experience is garnered with the HTR process, we anticipate the participants understanding of it will also increase.

Conclusions

With growing demands and escalating costs, healthcare systems internationally face pressures to provide the highest quality of care possible under budgetary constraints. This underscores the importance of making well-informed policy decisions and investments that provide the greatest 'value for money'. The evidence-informed process of HTR offers a means to achieve this. With little implementation experience in the field of HTR, any existing efforts must be interrogated and built upon to develop better theoretical and practical understanding. The present findings underscore the criticality of stakeholder engagement as central to the HTR process. Ultimately, based on this early experience with HTR, the determinants for successful stakeholder engagement involve a shared understanding of the goals and process, strong and consistent leadership, open and effective communication, and broad provision of support to its stakeholders. The kind of engagement is also critical, with effective engagement characterized as authentic and consensual. With this combination, HTR is hypothesized to not only be feasible, but also sustainable in a complex healthcare system.

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